

CLAIMS

1. (Currently Amended) A method for packaging a device, comprising:

applying a sacrificial material to the device;

applying a layer of structural material adjacent to the sacrificial material, the layer of structural material forming a housing adjacent at least a portion of the sacrificial material;

removing portions of the structural material to produce one or more apertures to expose at least a portion of the adjacent sacrificial material, the one or more apertures having a size and shape such that a removing material is able to pass through at least one of the one or more apertures but a protective material cannot pass through the one or more apertures;

removing the sacrificial material, wherein the housing of structural material with one or more apertures remains;

selecting the protective material to coordinate a viscosity of the protective material with the size and shape of the one or more apertures, wherein the protective material is selected to have a viscosity for preventing the protective material from being deposited on the device or any substrate underlying the housing;

depositing the protective material adjacent the housing of structural material, wherein, due at least in part to the viscosity of the protective material, the protective material overlays at least one of the one or more apertures in an amount sufficient to substantially close the overlaid one or more apertures without the protective material being deposited on the device or any substrate underlying the housing;

depositing additional material adjacent to the protective material; and

curing the protective material.

2. (Previously Presented) The method of Claim 1, wherein the operation of depositing the protective material adjacent the housing of structural material overlaying at least one of the one or more apertures in an amount sufficient to substantially close the overlaid one or more apertures without the protective material being deposited on the device or any substrate underlying the housing, further comprises:

providing a gas atmosphere within the housing, wherein the pressure is greater than or equal to 1 Pascal (Pa); and

providing a temperature of less than 600° Celsius (C).

3. (Original) The method of Claim 2, wherein the sacrificial material has a higher etch rate than the structural material.

4. (Original) The method of Claim 3, wherein the sacrificial material comprises either a photoresist or a polyimide material.

5. (Previously Presented) The method of Claim 2, wherein the structural material is selected from a group of Silicon Dioxide (SiO₂) and Silicon Nitride (Si₃N₄).

6. (Previously Presented) The method of Claim 1, wherein the step of creating one or more apertures in the housing of structural material comprises use of sputter etching, plasma etching, or ion beam milling.

7. (Previously Presented) The method of Claim 2, wherein the step of removing the sacrificial layer comprises use of chemical etching.

8. (Original) The method of Claim 2, wherein the step of removing the sacrificial layer comprises use of either plasma ashing or plasma etching.

9. (Previously Presented) The method in Claim 2, wherein the step of depositing a protective material comprises wicking the protective material into at least one aperture of the one or more apertures of the housing.

10. (Previously Presented) The method of Claim 2, wherein the step of depositing the protective material comprises applying the protective material to at least a portion of the surface of the housing and allowing the protective material to flow into at least a portion of the one or more apertures in the housing.

11. (Previously Presented) The method of Claim 2, wherein the step of applying a layer of structural material comprises forming a structural layer having a thickness of between about 0.2 microns and about 20 microns.

12. (Original) The method of Claim 2, wherein the step of applying a sacrificial material comprises forming a sacrificial layer having a thickness of between about 0.2 microns and about 10 microns.

13-82. (Canceled)

83. (Currently Amended) The method of Claim ~~[[81]]~~1, wherein the additional material increases hermeticity of the housing.

84. (Previously Presented) The method of Claim 2, wherein the gas atmosphere comprises a gas selected from the group consisting of argon, nitrogen, helium, neon, sulfur hexafluoride, and air.

85. (Previously Presented) The method of Claim 2, wherein the gas atmosphere comprises a gas having relative humidity below 5%.

86. (Previously Presented) The method of Claim 85, wherein the gas comprises air.

87. (Previously Presented) The method of Claim 1, further comprising adjusting a first viscosity of the protective material to a second viscosity so that the protective material does not deposit on the device or any substrate.

88. (Previously Presented) A method for packaging a device, comprising:
applying a sacrificial organic material to the device;
applying a layer of structural material adjacent to the sacrificial material, the layer of structural material forming a housing adjacent at least a portion of the sacrificial material;

removing portions of the structural material to produce one or more apertures to expose at least a portion of the adjacent sacrificial material, the one or more apertures having a size and shape such that a removing material is able to pass through at least one of the one or more apertures but a protective material cannot pass through the one or more apertures;

removing the sacrificial material, wherein the housing of structural material with one or more apertures remains;

selecting the protective material to coordinate a viscosity of the protective material with the size and shape of the one or more apertures, wherein the protective material is selected to have a viscosity for preventing the protective material from being deposited on the device or any substrate underlying the housing;

providing a gas atmosphere within the housing, wherein the pressure is greater than or equal to 1 Pascal (Pa), wherein the gas atmosphere comprises a gas selected from the group consisting of argon, nitrogen, helium, neon, sulfur hexafluoride, and air;

providing a temperature of less than 600° Celsius (C);

depositing the protective material adjacent the housing of structural material, wherein, due at least in part to the viscosity of the protective material, the protective material overlays at least one of the one or more apertures in an amount sufficient to substantially close the overlaid one or more apertures without the protective material being deposited on the device or any substrate underlying the housing;

curing the protective material; and

depositing additional material adjacent to the protective material, wherein the additional material increases hermeticity of the housing.

89. (New) The method of Claim 1, wherein the additional material is selected from a group of Silicon Dioxide (SiO₂) and Silicon Nitride (Si₃N₄).